

# **The Upgrading Problems and Countermeasures of Agricultural Trade Markets Based on the "15 Minute Living Circle"—Taking Duanzhou District Agricultural Trade Markets as an Example**

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**ABSTRACT:** *The analysis of the agricultural trade markets based on the concept of "15 minute living circle", manifests that there are problems with uneven spatial distribution, unsatisfactory operating status, and insufficient utilization of housing in upgrading the agricultural trade markets in Duanzhou District. As to countermeasures of this analysis, we have explored the upgrading of agricultural trade markets from the perspectives of reasonable retention, upgrading and renovation, gradual cancellation, and supporting new construction. This case study is beneficial for the problem oriented optimization of urban spatial layout, and for the configuration of public service facilities, can then serve for reference in the construction of a convenient 15 minute living circle.*

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## **I. INTRODUCTION**

The development concept of putting the people at the center requires safeguarding the fundamental interests of the people, enhancing people's well-being, continuously achieving development for the people, relying on the people, and sharing the achievements of development with the people, so that the achievements of modernization construction can benefit all the people more and more fairly. In recent years, the concept of "15-minute life circle" has been paid more and more attention in the urban planning and construction, and its importance is increasingly prominent. Walking for 15 minutes, ordinary people can walk about 1000 meters. For most people, this is suitable for walking distance, and for most elderly people, it is also an acceptable life service distance. Taking this distance as the service radius, building a safe, friendly and comfortable social basic life platform can further enhance people's happiness. Agricultural trade market is agreed as an important facility within the "15 minute living circle", and its planning and construction are important livelihood projects and popular support projects to ensure the people's good quality of life, improve the urban public service system, ensure the "vegetable basket" project of the city, and enhance the city's image [1]. The "Urban Residential Area Planning and Design Standards" (GB50180-2018) and the "Technical Guidelines for Community Life Circle Planning" (TD/T1062-2021) also propose relevant requirements and guidelines for the planning and construction of public service facilities such as agricultural trade markets within the "15 minute living circle". And there are researchers advocate, taking the improvement of the quality of agricultural trade markets as the core, we will explore the development of "standardized, intelligent, convenient, distinctive, and high-quality" agricultural market construction standards that are in line with local realities, guide the high standard construction of agricultural trade markets and the upgrading and transformation of existing agricultural trade markets to meet the living needs of residents [2]. Studying the agricultural trade market within the "15 minute living circle" is beneficial for promoting the equalization of public service facilities, improving the quality and efficiency of public service facilities, and promoting the construction of the "15 minute living circle" and high-quality urbanization development.

## **II. PROBLEMS UPGRADING AGRICULTURAL TRADE MARKETS CURRENT SITUATION**

Taking an overview of current situation in Duanzhou District, it has 35 agricultural trade markets, while the middle value of 2025 estimation is 40. Duanzhou District under the jurisdiction of Zhaoqing City, Guangdong Province, is located in the west of the central part of Guangdong Province and on the north bank of the middle and lower reaches of the Xijiang River. It belongs to the the Pearl River Delta Economic Zone and is the political, economic and cultural center of Zhaoqing City. The permanent population of Duanzhou District in

2022 is approximately 600000. There are currently 29 agricultural trade markets and 6 temporary farmers' markets, with a total area of approximately 110900 square meters, with approximately 17100 people per market (including temporary farmers' markets) and 185 square meters per thousand people per market (including temporary farmers' markets). The total area of the agricultural market is about 91100 square meters, with the largest agricultural market of about 9900 square meters and the smallest agricultural market of about 600 square meters; The total area of six temporary farmers' markets is approximately 19800 square meters.

The sample agricultural trade markets of Duanzhou District as Fig. 1 indicates that most of the agricultural trade markets occupy independent land. The independent construction strategy cannot respond the requirements of "15 minute living circle", makes the agricultural trade markets used for other purposes, especially parking. It is clear that the agricultural trade markets are miss-used by all kinds transportation facilities as shown in Fig. 1. Thus, comprehensive countermeasures are in urgent need for Duanzhou District to upgrade "15 minute living circle".



**Fig. 1 Sample agricultural trade markets**

**MAIN PROBLEMS OF AGRICULTURAL TRADE MARKETS**

The upgrading plan based on the population and future development of Duanzhou District in 2025 and 2035, can be observed in following Table(1). It is expected to allocate 26-44 agricultural trade markets according to the standard of 15000 to 25000 people per agricultural trade market. It is predicted that there will be 32-54 agricultural trade markets to be allocated by 2035, displaying an upgrading gap of 10 divisions at least.

**Table(1). Demand situation of agricultural trade markets**

| Year | Permanent population (10000 people) | Number of agricultural trade markets (Division) | Population standards for agricultural trade market services (people/agricultural trade market) |
|------|-------------------------------------|---|--|
| 2025 | 65                                  | 26-44   | 15000~25000  |
| 2035 | 80                                  | 32-54   |  |

Main issues left for us to handle is uneven spatial distribution in the first place. Residential areas in Duanzhou District includes commercial and residential comprehensive areas, office and residential comprehensive areas. And considering the coverage rate of residential areas, there is an uneven spatial

distribution problem in the agricultural and trade market. Generally speaking, the distribution of agricultural trade markets is too dense, with overlapping service radii; Some residential areas in the east, west, and north of the urban area have not built agricultural trade markets, and there are blind spots in the service scope. According to the statistical analysis of the service radius of the "15 minute living circle", the coverage rate of residential land covered by the existing agricultural trade markets and temporary farmers' markets is only 68% in Duanzhou District.

Issue in the second place is the operating status of some agricultural trade markets is not ideal. With the upgrading of large supermarkets, lifestyle supermarkets, fresh food supermarkets, community convenience stores, street meat and vegetable stalls, and online e-commerce, the operation of agricultural trade markets has been impacted to a certain extent. According to the investigation, about 50% of the agricultural trade markets are profitable, while the rest are unprofitable or have losses. In addition, the temporary farmers' markets, due to their relatively formal nature, have low entry barriers and low operating and management costs, which are also important reasons for the poor operating status of some agricultural trade markets.

Last but not least, there is also inadequate utilization of housing in agricultural trade markets. Most of the property rights of the houses used in the agricultural market belong to real estate companies and village collectives, and the market operation lacks effective supervision and management measures. The relatively prominent phenomena are some planned and constructed agricultural trade markets not attracting investment, being idle, or being used for other purposes. Currently, there are only 9 markets that have been built but not yet operated or used for other purposes, with an area of approximately 32000 square meters.

### **III. COUNTERMEASURE FOR UPGRADING AGRICULTURAL TRADE MARKETS**

According to the population and future upgrade requirements of Duanzhou District in 2035, a standard of 15000 to 25000 people per agricultural trade market is planned to be allocated for the trade of agricultural products. It is predicted that 32 to 54 farmer's markets will need to be allocated by 2035. Based on the distribution of residential areas and road network planning, the ARCGIS accessibility analysis method was used to layout the agricultural trade market. By 2035, the analysis results display a total of 51 agricultural trade markets should be planned in Duanzhou District. According to the service radius of the "15 minute living circle", the coverage rate of 51 agricultural trade markets on residential land in Duanzhou District is about 95%, basically covering residential areas. This requires the development of comprehensive upgrading strategies, especially reasonable preservation, standardized transformation, gradual cancellation, and supporting new construction of agricultural trade markets.

#### **REASONABLE PRESERVATION OF AGRICULTURAL TRADE MARKETS**

As to the reasonable preservation, it is critical to make agricultural trade markets preserving reasonable. For the agricultural market with current conditions, good environment, complete facilities, and the site that meets the requirements of relevant land spatial planning and agricultural market planning control, the plan will be retained. The agricultural market that meets the relevant requirements of the "15 minute living circle" should be firmly retained, and standardized transformation will be properly carried out at the same time. For agricultural trade markets and temporary farmers' markets that do not meet the requirements of the "15 minute living circle" in the national spatial planning, but cannot be cancelled in the near future, they will be temporarily retained as transitional countermeasure, however, should be timely cancellation according to urban upgrading needs later. Gradually abolish temporary farmers' markets should be carried out with the preservation. For the temporary farmers' market abolish, in order to ensure the service of the local market, according to the principle of "demolishing one to supplement one", the farmers' market will be rebuilt locally and nearby in the updated plan[3]. However, the reconstruction of the farmers' market has a significant impact on the overall situation. Taking into account urban upgrading, land conservation, land economy, optimization of spatial layout, and market operation, temporary agricultural trade markets can only be gradually abolished. We advocate to gradually integrate temporary farmers' markets with surrounding agricultural trade markets, optimize the layout of upgrading, and revitalize the land occupied by temporary farmers' markets, taking into account the actual urban upgrading and demand. Only by gradually abolishing temporary farmers' markets in this way, can we intensively utilize land, fully tap into its value, and enhance the image of the city accordingly.

#### **STANDARDIZED TRANSFORMATION OF AGRICULTURAL TRADE MARKETS**

As to ensure a standardized transformation, Duanzhou District should promote the transformation and improvement of the current agricultural trade market, to improve the quality of the internal and external environment of the market, and upgrade supporting facilities by means of standardization. With the core of improving the service quality of agricultural trade markets, we will explore the development of upgrading standards for agricultural trade markets that are in line with local realities, guide the construction of high standards for agricultural trade markets and the transformation of existing agricultural trade markets. What's

more, priority should be given to ensuring the supplementation of agricultural trade markets in service blind areas, and a layout plan for agricultural market facilities should be formulated based on urban renewal and the construction of new urban areas.

Duanzhou District must combine the actual operation of the agricultural trade markets and future economic and social development trends, configure the agricultural trade markets according to the "15 minute living circle" service radius, and make up for the shortcomings of the agricultural trade markets. Only in this way can we adapt to local conditions, implement precise policies, and ensure the implementation of plans and service balance for the transformation of agricultural trade markets. The renovation standards for the agricultural trade markets should have a construction area of 2000-3000 square meters per location, and should not be less than 1500 square meters. Efforts should be made to not occupy independent land, and strive for unified operation and centralized management after completion. It is also clearly stipulated that the facilities of the agricultural trade markets cannot be divided and transferred.

#### **SUPPORTING NEW CONSTRUCTION OF AGRICULTURAL TRADE MARKETS**

For the new construction of supporting agricultural trade markets, some studies suggest that when building or renovating (expanding), it should be built according to the requirements. The supporting agricultural trade markets should be submitted for approval, constructed, inspected, and put into use simultaneously with the main project, and their use should not be changed without authorization [4]. This countermeasure still needs to be coordinated with the land scale or building area of the agricultural market, regulatory urban planning, and special planning for the agricultural market. Taking the people as the center, it is necessary to start from actual needs, combine with urban development trends and the development and construction requirements of the "15 minute living circle", optimize and improve the spatial layout of the agricultural trade market, improve the supervision and management level of the agricultural trade market, internal and external environmental quality, service quality and level, and create an efficient, convenient, and comfortable "15 minute living circle" [5]. We advocate that the newly built agricultural market should comprehensively consider factors such as the "15 minute living circle" service radius, serving population, and land space planning, so as to comprehensively plan and construct the agricultural market in new urban areas or by utilizing existing commercial and old factory buildings and other existing spaces. At the same time, for agricultural trade markets with poor current conditions, outdated facilities, and non compliant standards, supporting expansion will be carried out according to the comprehensive plan.

To develop comprehensive upgrade strategies should also consider upgrading software and hardware support as well as internal and external environments. The construction plan for upgrading the "15 minute living circle" agricultural trade market must comprehensively consider the construction of infrastructure, operation facilities, management facilities, and institutional facilities. Among them, infrastructure construction must comprehensively consider lighting and air quality, ground construction, on-site wall construction, water supply, power supply, drainage, sewage discharge, fire protection, public toilet setting, vehicle parking, etc. The construction of business facilities must comprehensively consider the business layout, booth construction, booth area, etc. The construction of management facilities must comprehensively consider public facilities, shopping guidelines, testing facilities, environmental hygiene, and the requirements for employee hygiene. The construction of institutional facilities must comprehensively consider aspects such as fire safety management, commodity management, and hygiene management. In short, only by comprehensively considering the upgrading facilities and the internal and external environment as well, can we tailor the upgrading plan for the "15 minute living circle" agricultural trade market based on the spatial location and functional characteristics.

#### **IV. DISCUSSION**

The concept of "15 minute living circle" provides important guidance for us to improve the level of refined governance in response to the actual problems of the agricultural market and in combination with urban planning. The relevant functional departments of the agricultural trade market should take joint action, strengthen supervision and management, accelerate the investment and operation of approved, built but currently not yet invested or operated agricultural trade markets, urge relevant ownership units to implement relevant planning and control requirements, promote the investment and operation of the agricultural trade market, and make it put into use as soon as possible. To achieve a smooth upgrade, it is also essential to improve the supervision mechanism. Improve the supervision mechanism, strengthen the supervision and management of agricultural trade markets owners (managers) and operators, create a good operating and consumption environment, is conducive to achieving orderly operation, improving service effectiveness, and better playing a service role. This depends on strengthening institutional construction, establishing practical and feasible systems for standardized operation, cleanliness and hygiene, food safety, consumer rights protection, fire safety, and public security, and implementing legal and regulatory management of agricultural market operations and trading activities to ensure standardized, orderly, and safe market operations. To effectively guide the high-

quality upgrading of agricultural trade markets, it is necessary to systematically study upgrading strategies, spatial layout, construction methods, and implementation measures.

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